BROOKHAVEN NATIONAL LABORATORY

Work Permit # DRL-2010-9
Work Order # _____
Job# _____ Activity# _____

1. Work requester fills out this section. ☐ **Standing Work Permit**

Requester: Don Lynch	Date: 6/14/2010	Ext.: 2253	Dept/Div/Group: PO/PHENIX
Other Contact person (if different from requester): Carter Biggs			7515
Work Control Coordinator: Don Lynch		Start Date6/15/2010	Est. End Date: 7/15/2010
Brief Description of Work: Remove HBD detector from CM region of IR and prep for final disposition			
Building: 1008	Room: IR	Equipment: HBD	Service Provider: PHENIX techs

. WCC, Requester/Designee, Service Provider, and ES&H (as necessary) fill out this section or attach analysis

ES&H ANALYSIS				
Radiation Concerns	☐ None	☒ Activation	☐ Airborne	☐ Contamination	☐ Radiation
Radiation Generating Devices:	☐ Radiography	☐ Moisture Density Gauges	☐ Soil Density Gauges	☐ X-ray Equipment
☐ Special nuclear materials involved, notify Isotope Special Materials Group			☐ Fissionable materials involved, notify Laboratory Criticality Officer	
Safety Concerns	☒ None	☐ Ergonomics	☐ Transport of Haz/Rad Material	
☐ Adding/Removing Walls or Roofs	☐ Confined Space*	☐ Explosives	☐ Lead*	☐ Penetrating Fire Walls
	☐ Corrosive	☐ Flammable	☐ Magnetic Field*	☐ Pressurized Systems
☐ Asbestos*	☐ Cryogenic	☐ Fumes/Mist/Dust*	☐ Material Handling	☐ Rigging/Critical Lift
☐ Beryllium*	☐ Electrical	☐ Heat/Cold Stress	☐ Noise*	☐ Toxic Materials*
☐ Biohazard*	☐ Elevated Work*	☐ Hydraulic	☐ Non-ionizing Radiation*	☐ Vacuum
☐ Chemicals*	☐ Excavation	☐ Lasers*	☐ Oxygen Deficiency*	☐ Other Using Crane w Flam. Gas in IR
* Does this work require medical clearance or surveillance from the Occupational Medicine Clinic? ☐ Yes ☒ No				
Environmental Concerns		☒ None	☐ Work impacts Environmental Permit No.	
☐ Atmospheric Discharges (rad/non-rad)		☐ Land Use	☐ Soil Activation/contamination	☐ Waste-Mixed
☐ Chemical or Rad Material Storage or Use		☐ Liquid Discharges	☐ Waste-Clean	☐ Waste-Radioactive
☐ Cesspools (UIC)		☐ Oil/PCB Management	☐ Waste-Hazardous	☐ Waste-Regulated Medical
☐ High water/power consumption		☐ Spill potential	☐ Waste-Industrial	☐ Underground Duct/Piping
Waste disposition by:				☐ Other
Pollution Prevention (P2)/Waste Minimization Opportunity:		☒ None ☐ Yes		
FACILITY CONCERNS	☒ None			
☐ Access/Egress Limitations	☐ Electrical Noise	☐ Potential to Cause a False Alarm		☐ Vibrations
	☐ Impacts Facility Use Agreement		☐ Temperature Change	☐ Other
☐ Configuration Control	☐ Maintenance Work on Ventilation Systems		☐ Utility Interruptions	
WORK CONTROLS				
Work Practices				
☐ None	☐ Exhaust Ventilation	☐ Lockout/Tagout	☐ Spill Containment	☐ Security (see Instruction Sheet)
☒ Back-up Person/Watch	☐ HP Coverage	☐ Posting/Warning Signs	☐ Time Limitation	☐ Other
☐ Barricades	☐ IH Survey	☐ Scaffolding-requires inspection	☐ Warning Alarm (i.e. “high level”)	
Protective Equipment				
☐ None	☐ Ear Plugs	☐ Gloves	☐ Lab Coat	☐ Safety Glasses
☐ Coveralls	☐ Ear Muffs	☐ Goggles	☐ Respirator	☐ Safety Harness
☐ Disposable Clothing	☐ Face Shield	☐ Hard Hat	☐ Shoe Covers	☒ Safety Shoes ☐ Other
Permits Required (Permits must be valid when job is scheduled.)				
☒ None	☐ Cutting/Welding	☐ Impair Fire Protection Systems		
☐ Concrete/Masonry Penetration	☐ Digging/Core Drilling	☐ Rad Work Permit-RWP No		
☐ Confined Space Entry	☐ Electrical Working Hot	☐ Other		
Dosimetry/Monitoring				
☒ None	☐ Heat Stress Monitor	☐ Real Time Monitor	☐ TLD	
☐ Air Effluent	☐ Noise Survey/Dosimeter	☐ Self-reading Pencil Dosimeter	☐ Waste Characterization	
☐ Ground Water	☐ O_2/Combustible Gas	☐ Self-reading Digital Dosimeter	☐ Other	
☐ Liquid Effluent	☐ Passive Vapor Monitor	☐ Sorbent Tube/Filter Pump		
Training Requirements (List below specific training requirements)				
Crane Operator, CA –Collider User, PHENIX Awareness				
Based on analysis above, the Walkdown Team determines the risk, complexity, and coordination ratings below:			**If using the permit when all hazard ratings are low, only the following need to sign: (Although allowed, there is no need to use back of form)**	
ES&H Risk Level:	☒ Low ☐ Moderate ☐ High		WCC:	Date:
Complexity Level:	☒ Low ☐ Moderate ☐ High		Service Provider:	Date:
Work Coordination:	☒ Low ☐ Moderate ☐ High		Authorization to start	Date:
			(Departmental Sup/WCC/Designee)	

3. Both work requester and service provider contribute to work plan (use attachments for detailed plans)

Work Plan (procedures, timing, equipment, and personnel availability need to be addressed): See Attached Removal procedure
Special Working Conditions Required: None
Operational Limits Imposed: .
Post Work Testing Required: No

Job Safety Analysis Required: ☐ Yes ☒ No	Walkdown Required: ☒ Yes ☐ No

Reviewed by: Primary Reviewer will determine the size of the review team and the other signatures required based on hazards and job complexity. Primary Reviewer signature means that the hazards and risks that could impact ES&H have been identified and will be controlled according to BNL requirements.

Title	Name (print)	Signature	Life #	Date
Primary Reviewer				
ES&H Professional				
Other				
Other C. Pearson				
Work Control Coordinator	Don Lynch		20146	
Service Provider				
	Review Done: ☐ in series	☐ team		

4. Job site personnel fill out this section.

Note: Signature indicates personnel performing work have read and understand the hazards and permit requirements (including any attachments).			
Job Supervisor:		Contractor Supervisor:	
Workers:	Life#:	Workers :	Life#:
Workers are encouraged to provide feedback on ES&H concerns or on ideas for improved job work flow. Use feedback form or space below.			

5. Departmental Job Supervisor, Work Control Coordinator/Designee

Conditions are appropriate to start work: (Permit has been reviewed, work controls are in place and site is ready for job.)			
Name:	Signature:	Life#:	Date:

6. Departmental Job Supervisor, Work Requester/Designee determines if Post Job Review is required. ☐ Yes ☐ No

Post Job Review (Fill in names of reviewers)			
Name:	Signature:	Life#:	Date:
Name:	Signature:	Life#:	Date:

7. Worker provides feedback.

Worker Feedback (use attached sheets as necessary)
a) WCM/WCC: Is any feedback required? ☐ Yes ☐ No

b) Workers: Are there better methods or safer ways to perform this job in the future? ☐ Yes ☐ No

8. Closeout: Work Control Coordinator (authorizing dept.) checks quality of completed permit and ensures the work site is left in an acceptable condition. (WCC can delegate clean up of work area to work supervisor)

Name:	Signature:	Life#:	Date:
Comments:			

Work plan Attachment **WP# DRL-2010-9**

HBD removal at completion of experimental program

INTRODUCTION

The HBD detector subsystem has completed its operational phase within the PHENIX experiment and now requires removal to make room for the new VTX and FVTX detector subsystems which will be installed for the next RHIC run (run 11). Both the east and west halves of the HBD detector will be removed. After removal the HBD detector halves will be taken by the HBD group experts for final disposition.

This work permit covers only the removal of the HBD from its installed location at PHENIX. Transportation from PHENIX to elsewhere on the BNL site for disassembly, source removal and disposition of internal components is the responsibility of the HBD group experts.

HBD Removal Procedure

1. In general, during the summer shutdown all PHENIX magnets will be ramped down and locked out. Verify that this is so.

2. Make sure HBD HV shall be turned off.

3. PHENIX techs shall disconnect all HV, LV and signal cables from both the East and West detectors and temporarily restrain the loose cable ends within the HBD cable trays using appropriate cable ties or equivalent.

4. After all cables have been removed, PHENIX gas system technicians shall close the 3-way valves on the supply and return lines to isolate and temporarily seal the detector halves.

5. Flexible supply and gas return lines shall then be positioned out of the way of the detector removal and restrained.

6. The HBD East upper and lower mounting brackets shall then be disconnected from the upper and lower support rails and the detector shall be carefully lowered (by hand) to the CM lift platform by 2 PHENIX mechanical technicians.

7 The HBD East module shall then be transferred by hand between PHENIX technicians stationed half way up the CM access stairs and at PHENIX track level. Technicians stationed on the CM access stairs shall maintain 3 point contact with the access stairs while handling the HBD East half detector.

8. The assembly shall be carried by hand to the east end of the AH area where it will be held for Health Physics scan.

9. The HBD West upper and lower mounting brackets shall then be disconnected from the upper and lower support rails and the detector shall be carefully lowered (by hand) to the CM lift platform by 2 PHENIX mechanical technicians.

10 The HBD West shall then be rotated 90 degrees and transferred by hand under the I-beams which supported the HBD halves. After clearing the I-beams, the HBD West shall be rotated back to its normal upright position and placed on the CM lift table.

11. The HBD West module shall then be transferred by hand between PHENIX technicians stationed half way up the CM access stairs and at PHENIX track level. Technicians stationed on the CM access stairs shall maintain 3 point contact with the access stairs while handling the HBD West half detector.

12. The assembly shall be carried by hand to the east end of the AH area where it will be held along with the East half detector for Health Physics scan.

13. BNL Health Physics shall be summoned to scan the detector for potential activation. The HBD detector shall remain in the PHENIX AH until released by BNL Health Physics.

14. The HBD experts shall then take charge of the HBD detector for final disposition.

15. All HBD Cables (LV, Signal and HV) shall be disconnected from their respective racks, carefully removed from their cable trays, removing and disposing properly of cable ties, etc. and rolled/bundled or otherwise neatly stowed in the PHENIX AH for delivery to HBD experts for final disposition. (Included in this equipment are the HBD HV and LV racks and the HBD heating and cooling system and associated controllers, power supplies and cabling.)

16. All flexible piping connections and HBD specific manifolds shall be disconnected from hard piping and appropriately stowed in the PHENIX AH for delivery to HBD experts for final disposition.

17. All HBD racks shall be physically disconnected and removed by PHENIX technicians using appropriate slings and cranes in the PHENIX IR. Once removed from the IR they shall be appropriately stowed in the PHENIX AH (or elsewhere at PHENIX as convenient) for delivery to HBD experts for final disposition.

18. All HBD gas system controls and other equipment both in the PHENIX AH (under the stairs in the HBD cubby and in the PHENIX gas mixing house shall be decommissioned, disconnected and stowed as appropriate in preparation for delivery to HBD experts for final disposition. (Note: gas system components may be stowed in their

current physical locations as long as necessary as long as they do not interfere with installation and services for new and existing PHENIX subsystems.)